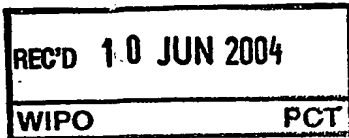


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Application No. S2003/0560 ✓

Date of Filing 29 July 2003 ✓

Applicant EXA SA, a Swiss Company of 17 Rue des Pierres du Niton, 1207 Geneva, Switzerland.

Dated this 7 day of April 2004.

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FORM NO. 1

Request for the Grant of a Patent

PATENTS ACT, 1992

The Applicant(s) named herein hereby request(s)

- ☐ the grant of a patent under Part II of the Act
- ☒ the grant of a short-term patent under Part III of the Act

on the basis of the information furnished hereunder.

1. Applicant(s)Name

Exa SA

Address17 Rue des Pierres du Niton
1207 Geneva
SwitzerlandDescription/Nationality

A Swiss Company

2. Title of Invention

A Treatment Composition

3. Declaration of Priority on basis of previously filed application(s) for same invention (Sections 25 & 26)Previous filing dateCountry in or for which filedFiling No.4. Identification of Inventor(s)

Name(s) of person(s) believed
by Applicant(s) to be the inventor(s)

Pierre ROCHAT

Address18 Chemin de la Haute Belotte
1222 Vesenaz
Geneva
Switzerland

5. Statement of right to be granted a patent (Section 17 (2) (b))

6. Items accompanying this Request – tick as appropriate

- (i) ☒ prescribed filing fee (€ 60)
- (ii) ☐ specification containing a description and claims
☒ specification containing a description only
☒ Drawings referred to in description or claims
- (iii) ☐ An abstract
- (iv) ☐ Copy of previous application(s) whose priority is claimed
- (v) ☐ Translation of previous application whose priority is claimed
- (vi) ☐ Authorisation of Agent (this may be given at 8 below if this Request is signed by the Applicant(s))

7. Divisional Application(s)

The following information is applicable to the present application which is made under Section 24-

Earlier Application No:

Filing Date:

8. Agent

The following are authorised to act as agent in all proceedings connected with the obtaining of a patent to which this request relates and in relation to any patent granted-

Name

Richard Paul

Address

Murgitroyd & Company
Unit 1, Block 8
Blanchardstown Corporate Park
Cruiserath Road
Dublin 15

9. Address for Service (if different from that at 8)

Signed

Name(s):

Richard Paul

Capacity (if applicant is a body corporate):

Date

29 July 2003

1 A Treatment Composition

2

3 Technical Field

4

5 The invention relates to a treatment composition for
6 treating a surface. In particular, the invention
7 relates to a composition for treating teeth and
8 household cleaning surfaces.

9

10 Background

11

12 A great many toothpaste compositions have been
13 developed and marketed for several years now.

14

15 It is known that toothpaste formulations may contain
16 various components, in particular water, a wetting
17 agent (for example glycerol, sorbitol, xylitol or
18 polyethylene glycol, etc.), a thickener (for
19 example xanthan gum), a source of flouride (usually
20 sodium fluoride or sodium monofluorophosphate (anti-
21 tooth-decay), a colorant, a flavouring, a sweetener,

1 a fragrance, a preserving agent, a surfactant and/or
2 additive, etc.

3

4 They generally also contain an abrasive agent which
5 must, by its mechanical action, remove dental plaque
6 while at the same time not subjecting the teeth
7 themselves to unacceptable abrasion.

8

9 Among the abrasive agents usually employed, mention
10 may be made of sodium bicarbonates and calcium
11 phosphates, sodium metaphosphates, aluminas and, in
12 recent years, silicas.

13

14 However, the agents of the prior art, in particular
15 silica and alumina abrasive agents in toothpaste
16 compositions, are not always of desirable refractive
17 index or porosity.

18

19 It is an object of the invention to overcome at
20 least some of the above disadvantages.

21

22 Statements of Invention

23

24 According to the invention, there is provided a
25 treatment composition which comprises a particulate
26 erasing agent, the particles of the erasing agent
27 being dimensioned to roll along a surface. In one
28 embodiment, the treatment composition is a personal
29 care treatment composition, such as, for example, a
30 dental care treatment composition. Other types of
31 personal care treatments include skin exfoliation
32 and personal washing.

1
2 In another embodiment, the treatment composition is
3 a household care treatment composition, thus, for
4 example, the treatment composition may be a hard
5 surface cleaner which may take the form of a
6 particulate solid or a fluid such as a cream. In
7 one embodiment, the hard surface treatment
8 composition is suitable for use in cleaning surfaces
9 such as baths, showers, sinks, tiled surfaces and
10 the like. In another embodiment, the hard surface
11 treatment composition is suitable for cleaning
12 kitchen utensils such as pots, pans and other
13 cooking and eating utensils. In another embodiment,
14 the hard surface treatment composition is suitable
15 for cleaning and/or polishing brassware, silverware
16 and other metallic objects.

17
18 In this specification, the term "particulate erasing
19 agent" should be understood as referring to a
20 multiplicity of relatively soft particles which are
21 dimensioned to be rolled along a surface and which,
22 during such a rolling action, pick up debris,
23 stains, plaque, tartar or the like from the surface,
24 especially dental and gum surfaces, in a manner
25 similar to which an eraser rubs pencil markings off
26 a page. As such, the term preferably excludes
27 abrasive particles.

28
29 The invention also relates to a method of treating
30 teeth comprising the steps of:

31 - applying a suitable amount of a dental
32 treatment composition according to the

1 invention onto a suitable applicator for the
2 composition;
3 - using the applicator to rub the composition
4 onto a surface of the teeth such that at
5 least some of the particles of the erasing
6 agent roll along at least a portion of the
7 teeth; and
8 - rinsing the composition off the teeth.

9
10 Typically, the applicator is a toothbrush,
11 interdental brush, or soft rubber cup. When the
12 applicator is a brush, it may be manually,
13 mechanically or electrically operated.

14
15 The invention also relates to the use of the process
16 of the invention in dental applications such as
17 teeth whitening, plaque and tartar removal and
18 general cleaning or polishing of the teeth, gums and
19 mucous membranes of the buccal cavity, and
20 prosthetic parts such as crowns, bridges and
21 complete or partial dentures. As such, the process
22 may involve either blast application using some form
23 of particle accelerator, or manual application, of
24 the treating agent. Manual application includes
25 conventional brushing, rubbing, polishing or the
26 like.

27
28 The invention also relates to the use of the process
29 of the invention in treating bone or in skin
30 exfoliation treatment.

31

1 The invention also relates to a method of treating a
2 hard surface comprising the steps of:

- 3 - applying a suitable amount of a hard surface
4 treatment composition according to the
5 invention onto a suitable applicator for the
6 composition;
- 7 - using the applicator to rub the composition
8 onto a hard surface such that at least some
9 of the particles of the erasing agent roll
10 along at least a portion of the hard surface;
11 and
- 12 - rinsing the composition off the hard surface.

13
14 The invention also relates to a method of
15 exfoliating skin comprising the steps of:

- 16 - applying a suitable amount of an exfoliating
17 treatment composition according to the
18 invention onto a suitable applicator for the
19 composition;
- 20 - using the applicator to rub the composition
21 onto skin such that at least some of the
22 particles of the erasing agent roll along at
23 least a portion of the skin; and
- 24 - rinsing the composition off the skin.

25
26 In one preferred embodiment, exfoliating treatment
27 composition is applied by hand.

28
29 The invention also relates to the use of
30 precipitated or agglomerated alkali metal carbonate
31 as an erasing agent in personal and household care

1 treatment compositions, especially personal and
2 household care cleaning compositions.

3

4 The invention also relates to the use of
5 precipitated or agglomerated alkali metal carbonate
6 in dental treatments, personal washing, skin
7 exfoliating, and household cleaning, compositions.

8

9 Typically, the precipitated or agglomerated alkali
10 metal carbonate is precipitated calcium carbonate
11 (PCC). Typically, the PCC has an average particle
12 size between 1 and 1000 microns. Preferably, the
13 PCC has an average particle size which is less than
14 500 microns, more preferably less than 200 microns,
15 more preferably less than 100 microns. Typically,
16 the PCC has an average particle size which is
17 greater than 10 microns, preferably greater than 20
18 microns, more preferably more than 50 microns.

19

20 In one embodiment of the invention, the dental
21 treatment composition comprises at least 3% water
22 (W/W), generally at least 5% water (W/W).

23

24 Preferably, the particles of the erasing agent
25 comprise a precipitate or agglomerate of an
26 insoluble alkali metal salt. Typically, the salt is
27 a carbonate. Suitably, the alkali earth metal is
28 calcium. Most preferably, the particles of the
29 erasing agent comprise a precipitate or agglomerate
30 of insoluble calcium carbonate.

31

1 Preferably, the particles are generally round. In
2 this specification the term "generally round" as
3 applied to particles should be understood to mean
4 any shape which of particle which enables the
5 particle to easily assume a rolling motion when
6 moved along a surface. As such, while the term is
7 primarily intended to refer to spherical particles,
8 it is not intended to exclude other types of
9 spheroids such as spheres having an oblong or
10 elliptical shape. Typically, the particles will
11 have an irregular surface configuration.

12
13 Ideally, the particles are relatively soft.
14 Generally, the particles have an average hardness of
15 less than 10 Mohs, typically less than 8 Mohs, and
16 preferably less than 6 Mohs. Typically, the
17 particles will have an average hardness of at least
18 1 Mohs, and preferably of at least 2 Mohs. In a
19 preferred embodiment of the invention, the particles
20 will have an average hardness of about 3 Mohs.
21 Typically, the particles have an average maximum
22 diameter of between 30 and 1000 microns.

23
24 In one embodiment of the invention, the particles
25 have an average maximum diameter of between 30 and
26 1000 microns, preferably between 60 and 120 microns,
27 and most preferably between 70 and 80 microns.

28
29 Typically, the particulate erasing agent comprises
30 between 1 and 75 % of the total composition (W/W).
31 Preferably, the particulate erasing agent comprises
32 between 3 and 75 % of the total composition (W/W).

1 In one embodiment of the invention, the dental
2 treatment composition comprises a paste or a gel.
3 Preferably, the dental treatment composition is a
4 toothpaste. Alternatively, the dental treatment
5 composition may comprise a teeth whitening
6 composition, a plaque removal composition, a
7 toothgel, a polishing paste, or the like.

8
9 In one embodiment of the invention, the dental
10 treatment composition comprises a powder which,
11 optionally, is used as an additive in a further
12 component or components.

13
14 The invention also relates to the combination of a
15 dental treatment composition according to the
16 invention contained within a dispenser for the
17 composition. Typically, the dispenser comprises a
18 deformable tube. Other types of dental care
19 composition dispensers are also envisaged.

20
21 The invention also relates to a particulate erasing
22 agent comprising particles which are dimensioned to
23 roll along a surface, for use in a dental treatment
24 composition.

25
26 Suitably, the particles of the erasing agent
27 comprise a precipitate or agglomerate of an
28 insoluble alkali metal salt, such as calcium
29 carbonate. Ideally, the dental treatment
30 composition is a toothpaste or a toothgel.
31 Preferably, the particles of the erasing agent are
32 non-crystalline.

1
2 The invention also relates to the use of an alkali
3 metal carbonate, typically precipitated or
4 agglomerated alkali metal carbonate, as a liquid
5 hydrocarbon absorbing agent.

6

7 The invention also relates to a process for
8 absorbing liquid hydrocarbon comprising the steps of
9 bringing an alkali metal carbonate into contact with
10 the liquid hydrocarbon, allowing the alkali metal
11 carbonate absorb the liquid hydrocarbon, and
12 removing the alkali metal carbonate.

13

14 In this specification, the term "liquid hydrocarbon"
15 should be understood as meaning oil, petroleum and
16 diesel.

17

18 Suitably, the process and use is suitable for
19 cleaning up spilled oil.

20

21 Ideally, the precipitated or agglomerated alkali
22 metal carbonate is precipitated calcium carbonate.
23 Suitably, the precipitated or agglomerated alkali
24 metal carbonate has an average particle size of less
25 than 200 microns, more preferably less than 100
26 microns. Suitably, the precipitated or agglomerated
27 alkali metal carbonate has an average particle size
28 of greater than 10 microns, more preferably greater
29 than 20 microns. In one embodiment, the precipitated
30 or agglomerated alkali metal carbonate has an
31 average particle size of between 50 and 100 microns,

1 preferably between 60 and 90 microns, more
2 preferably between 70 and 80 microns.

3

4 Brief Description of the Drawings

5

6 The invention will be more clearly understood from
7 the following description of some embodiments
8 thereof, given by way of example only, with
9 reference to the following figures in which:

10

11 Fig 1 is an illustration of a particle of a treating
12 agent according to the invention; and

13

14 Fig 2 illustrates the process of the invention.

15

16 Detailed Description

17

18 Referring to the drawings, and initially to Fig 1,
19 there is illustrated a particle, indicated generally
20 by the reference numeral 1, which is used in the
21 process of the invention. The particle is a
22 particle of precipitated calcium carbonate and has a
23 generally round, and slightly irregular, shape and a
24 rough, irregular, surface configuration.

25

26 Referring to Fig 2, the process of the invention is
27 illustrated in which the particle 1 is rubbed along
28 a surface 2 of a tooth having a coating 3 of plaque
29 to be removed. Due to the nature and the round
30 shape of the particle 1, upon impact the particle 1
31 rolls along the surface, rubbing the surface and
32 absorbing the coating 3 onto a surface of the

1 particle. This has the net effect of removing the
2 coating from the surface without causing any damage
3 to the surface.

4

5 Example 1

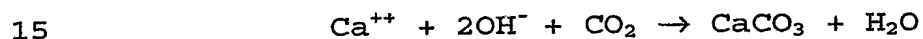
6

7 Method of production of particulate erasing agent.
8 Production of insoluble calcium carbonate particles
9 is carried out by providing free Ca^{++} in a liquid
10 with a PH over 7 by dissolving calcium oxide in
11 water.

12

13 Addition of CO_2 results in the precipitation CaCO_3 .

14



16

17 Various other methods of production of particles
18 forming part of treating agents according to the
19 invention have been investigated using various types
20 of substrates including plastic, metal and polymer.

21 Examples of these methods include:

22

23 Chemical

24

25 There are numerous chemical methods for producing
26 particulate erasing agents. Generally, chemical
27 methods result in very fine powder particle sizes.
28 Such methods include Sol Gel, chemical
29 precipitation, Reaction, reduction (hydrogen in an
30 autoclave to reduce metal salts to the metal),
31 decomposition (eg metal carbonyls) and Electrolysis.

32

1 One specific method includes the steps of dissolving
2 apatite in nitric acid. The thus formed liquid is
3 cooled to crystallise out calcium nitrate. Calcium
4 nitrate crystals are then separated from the thus-
5 formed slurry by centrifugation or filtration. NH_3
6 and CO_2 is then added to the calcium nitrate,
7 resulting in precipitation of CaCO_3 and ammonium
8 nitrate liquid. The precipitated CaCO_3 is then
9 separated by filtering.

10

11 Spray drying

12

13 This is the most widely used industrial process
14 involving particle formation and drying. It is
15 highly suited for the continuous production of dry
16 solids in either powder, granulate or agglomerate
17 form from liquid feedstocks as solutions, emulsions
18 and pumpable suspensions.

19

20 Agglomeration

21

22 The most common method of agglomeration is where the
23 constituents are physically mixed together with an
24 organic binder. The solvent is then driven off and
25 the resultant material sized. The binder should be
26 burnt off during spraying. This process is used in
27 the manufacture of NiAl , AlSi or polyester powders.
28 The most common method of agglomeration is where the
29 constituents are physically mixed together with an
30 organic binder. The solvent is then driven off and
31 the resultant material sized. The binder should be

1 burnt off during spraying. This process is used in
2 the manufacture of NiAl, AlSi-polyester powders.

3

4 The use of spray drying has become another common
5 method for the agglomeration of powders. Here, a
6 slurry is formed with the constituents and this is
7 then fed into a rotary spray head. Here, the slurry
8 forms an atomised cloud which is solidified by an
9 opposing warm air stream to produce a powder. This
10 method is used for ceramics such as zirconia and
11 cermets such as WC-cobalt. The powder is largely
12 spherical but in the as spray dried state can be
13 porous and friable. The material is often densified
14 and stabilised by sintering and/or spray
15 densification.

16

17 There are also methods of mechanical agglomeration
18 (eg the Hosakawa method) where for example a hard
19 constituent is mechanically driven into a softer
20 matrix particle to form a composite powder. Indeed,
21 simple ball grinding can be used to mechanically
22 alloy two or more constituents together.

23

24 Although sintering can be used as part of the spray
25 drying process it can also be used alone as a method
26 to manufacture powders. The constituents are mixed
27 together and heated to get some solid state
28 diffusion going and then the resultant product is
29 crushed. A number of repeated cycles can be used to
30 promote further alloying in which case the powder is
31 called a "reacted" powder.

32

1 Atomisation

2 There are a number of atomisation techniques which
3 all rely on the production of a molten pool as the
4 source. Atomisation methods include Rotating
5 Electrode, Vibrating Electrode (arc), Centrifugal
6 (from a melt) and Rapid Solidification (eg aluminium
7 ribbon). However, by far the most commonly used
8 methods are either water or gas atomisation.

9

10 Others

11

- 12 - Solid State Reduction
- 13 - Electrolysis
- 14 - Electrodeposition
- 15 - Mechanical Comminution

16

17 The sources of commercially available precipitated
18 calcium carbonate, and one means of manufacture, are
19 listed in the paper entitled "Fine-Ground and
20 Precipitated Calcium Carbonate" by Larisa Gorbaty,
21 Andreas Leder and Yuka Yoshida, published in the
22 Chemical Economics Handbook (1996 - SRI
23 International).

24

25 Toothpaste Compositions

26

27 As described above, the dental treatment composition
28 of the invention may take the form of a toothpaste.
29 In this regard, particulate erasing agent
30 (precipitated calcium carbonate as formed in Example

1 2) may be added to a toothpaste composition in an
2 amount of 20 % of the toothpaste composition (w/w).
3 Prior to addition of the erasing agent it is sized
4 using vibrating sieves to ensure that the particles
5 have an average diameter of between 70 and 80
6 microns. Other suitable sizing methods will be
7 apparent to those skilled in the art. Details of
8 toothpaste formulations will be well known to those
9 skilled in the field dental treatment compositions
10 and will not be described in any detail in this
11 specification.

12 13 Personal Wash Compositions

14
15 The particulate erasing agent as produced in Example
16 3 (precipitated calcium carbonate) may be used in
17 the formulation of personal wash compositions such
18 as, for example, soap, shower gel, body wash, and
19 the like. The amount of particulate erasing agent
20 added to the compositions can be varied depending on
21 the type of product. Otherwise, the composition of
22 such personal wash composition will be known to
23 those skilled in the field of personal wash
24 formulation.

25 26 Household Care Composition

27
28 The formulation of household care composition,
29 including hard surface cleaners in the forms of
30 creams and particulate solids, will be well known to
31 those skilled in the field of household cleaning and
32 polishing composition formulation.

1

2 Liquid Hydrocarbon Absorbing

3

4 Precipitated calcium carbonate (PCC) having a
5 particle size of between 79 and 80 microns (as
6 prepared above) is used to remove oil spilled on the
7 ground. The PCC is poured onto the oil in an amount
8 sufficient to cover the oil. The PCC is then left
9 to absorb the oil. After a suitable amount of time,
10 the PCC is then swept up thereby removing the oil.

11

12 The invention is not limited to the embodiments
13 hereinbefore described which may be varied in both
14 construction and process step without departing from
15 the invention.

1/1

Fig. 1

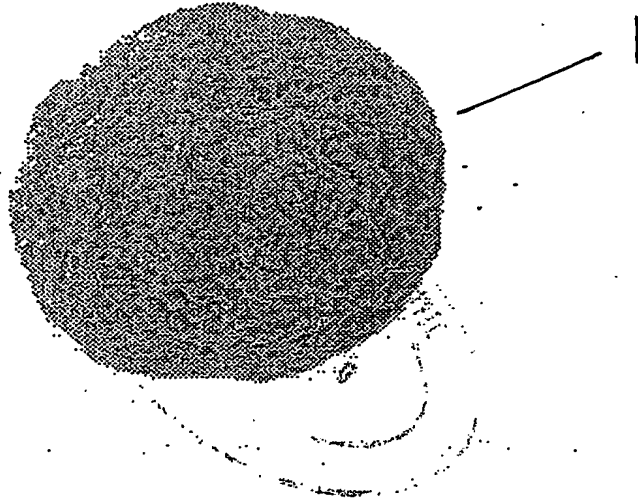
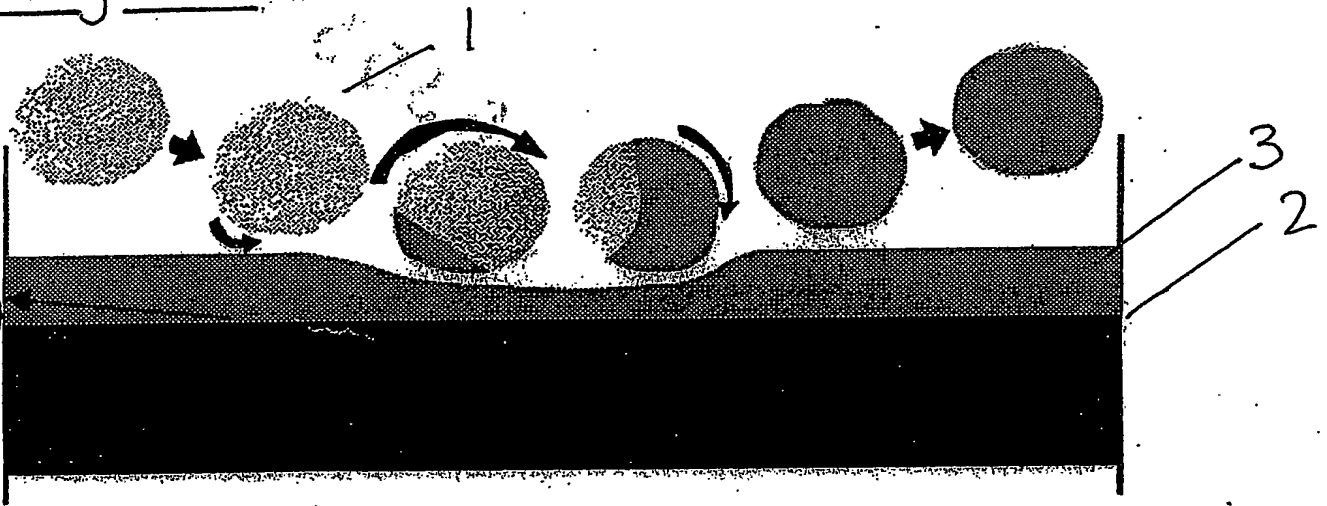


Fig. 2



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